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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/555,284	11/02/2005	Charles D. Lang	UC0330 US PCT	4192

7590 09/29/2008  
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EXAMINER
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VIJAYAKUMAR, KALLAMBELLA M

ART UNIT	PAPER NUMBER
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1793

MAIL DATE	DELIVERY MODE
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09/29/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/555,284	<b>Applicant(s)</b> LANG ET AL.	
	<b>Examiner</b> KALLAMBELLA VIJAYAKUMAR	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 02 November 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-19 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-19 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 02 November 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>05/03/2006</u> .  | 6) <input type="checkbox"/> Other: _____                          |

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### **DETAILED ACTION**

- This application is a 371 of PCT/US 04/16409 filed 05/19/2004. This application claims the benefit under 35 USC 119(e) over US Provisional 60/471,797 filed 05/19/2003.
- Status of Claims and Priority:
  - Claims 1-19 are currently pending with the application.
  - The species of polypyrroles and polyanilines in claim-2, and the polymers in claims -3-5 are not supported by the US Provisional application, and get the priority of 05/19/2004.
- The examiner has considered the IDS filed 05/03/2006.

### ***Claim Rejections - 35 USC § 102***

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

1. Claims 1-2, 6-8, 10-12, and 17-19 are rejected under 35 USC 102(b) as anticipated by, or under 35 U.S.C. 103(a) as being obvious over Aoki et al (US 2001/0022497).

Aoki et al teach an EL Device comprising a photoconducting EL layer with hole-injection properties and a photocatalyst (0094-95). The photoconducting layer was formed from the coating solutions D2 or D3 containing a stock solution of D1 comprising photocatalyst, alkoxysilane, 2N hydrochloric acid (13.65 wt% water in D1) and IPA; and Baytron PT (PEDOT/PSS 1-5 wt% aqueous dispersion) in the wt ratio of 2:1 to 1:2 with improved light emission (0237-0241). The metal salts such as nitrates of Na, Ca, Sr, Mg, K, Li, Cs, Ba were added to the photocatalyst containing layer in an amount of 0.1-10 wt% of the photocatalyst carrier with improved light emission. The amount of the photocatalyst in the layer was about 20-60 wt% of the layer. (0108; 0055). The oligothiophene derivatives were further added in the photocatalyst layer (0100). All the limitations of the instant claims are met.

The reference is anticipatory.

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In the alternative that the disclosure by Aoki et al be insufficient to anticipate the instant claims (not “doped”), the instant claimed composition nonetheless would have been obvious to a person of ordinary skilled in the art over the disclosure because the reference teaches each of the claimed ingredients within the structure and composition. The burden is upon the applicant to prove otherwise. In re Fitzgerald, 619 F.2d 67, 205 USPQ594 (CCPA 1980).

2. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki et al (US 2001/0022497) in view of Buechel et al (US 2002/0179900) or Han et al (US 5,225,495).

The disclosure on the coating composition and device by Aoki et al as set forth in rejection-1 is herein incorporated.

The prior art fails to teach the addition of specific polymer/oligomer per the claims.

In the analogous art, Buechel et al teach the use of light emitting layer comprising a conductive polymer such as polythiophene, polypyrrole and polyaniline doped with polystyrene sulfonic acid, and metal ions such as K, Rb, Cs, Mg, Ba and or Ca in an amount of 0.5 mmoles/g of coated layer, wherein the metal ions were added as respective metal carbonates, hydroxides or nitrates. The conductive polymers were monomers or oligomers or mixtures thereof (P 0005-14).

In the analogous art, Han et al teach the sulfonic acid doped oligoaniline, oligopyrrole and oligothiophene in forming coatings for electronic and semiconducting photoconductor junctions and electroluminescent lights (Cl-30, Ln 50-68). The oligomers included dimeric or oligomeric anilines, pyrroles and thiophenes with 2 to about 50 units (Cl-13, Ln 9-24; Ln 65 – Cl-14, Ln 1).

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Pertaining to claims 3-5, it would have been obvious to a person of ordinary skill in the art to include tetramers or higher oligomers of ICP in the coating composition of Aoki as functional equivalents over the teachings of Buechel or Han with predictable results and reasonable expectation of success, because the teachings are in the analogous art of electroluminescent materials that teach the oligomers of thiophene, pyrrole and aniline to be equivalents; and Aoki desires the addition of oligothiophene, and the selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

3. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki et al (US 2001/0022497) in view of Buechel et al (US 2002/0179900).

The disclosure on the coating composition and device by Aoki et al as set forth in rejection-1 is herein incorporated.

The prior art fails to teach the addition of specific anions per the claim.

In the analogous art, Buechnel et al teach the use of light emitting layer comprising a conductive polymer such as polythiophene, polypyrrole and polyaniline doped with polystyrene sulfonic acid, metal ions such as K, Rb, Cs, Mg, Ba and or Ca in an amount of 0.5 mmol/g of coated layer and the metal ions being added as salts of carbonates, hydroxides or nitrates. The conductive polymers could be monomers or oligomers or mixtures thereof (P 0005-14).

Pertaining to claim 13, the Aoki teaches the addition of alkali/alkaline-earth-metal nitrates, and it would have been obvious to a person of ordinary skill in the art to substitute the

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salts of Aoki with the salts of Buechnel containing hydroxide/carbonate as functional equivalent with predictable results and reasonable expectation of success, because they are in the analogous art of electroluminescent materials and Buchnel teaches the hydroxides and carbonates to be equivalents with nitrates.

4. Claims 3, 9 and 14-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Aoki et al (US 2001/0022497).

The disclosure on the composition and device by Aoki et al as set forth in rejection-1 is herein incorporated.

The prior art fails to teach the addition of specific polymer/oligomer per the claim-3 or specific alcohol per claim-9, or the ranges for the salt per the claims 14-16.

Pertaining to claim-3, Aoki teaches the addition of oligothiophene that includes at least a dimer and greater (See Han et al, Rejection-2), and it would have been obvious to a person of ordinary skilled in the art to include tetramers or higher oligomers as functional equivalents in the coating composition of Aoki with predictable results and reasonable expectation of success, and the selection of a known material based on its suitability for its intended use supported a prima facie obviousness determination in *Sinclair & Carroll Co. v. Interchemical Corp.*, 325 U.S. 327, 65 USPQ 297 (1945).

Pertaining to claim-9, the prior art teaches the addition of alcohol such as ethanol or isopropanol (P-0015), and it would have been obvious to a person of ordinary skilled in the art to substitute ethanol with n-propanol, because homologs (compounds differing regularly by the successive addition of the same chemical group, e.g., by -CH<sub>2</sub>- groups) are generally of

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sufficiently close structural similarity that there is a presumed expectation that such compounds possess similar properties. In re Wilder, 563 F.2d 457, 195 USPQ 426 (CCPA 1977). See also In re May, 574 F.2d 1082, 197 USPQ 601 (CCPA 1978).

Pertaining to claims 14-16, the prior art salt ranges in terms of molar concentration with the conductive polymer would overlap with the instant claimed ranges, and In the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a prima facie case of obviousness exists. In re Wertheim, 541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990). Further such a range for the metal salt in the conductive layer was well known in the art as disclosed by of Buechel et al (US 2002/0179900) (Abstract; 0009).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to KALLAMBELLA VIJAYAKUMAR whose telephone number is (571)272-1324. The examiner can normally be reached on M-F 07-3.30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on 5712721358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/KMV/

Sept 25, 2008.

/Stuart Hendrickson/

Primary Examiner, Art Unit 1793